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ABSTRACT

This paper reviews and summarizes the procedures used by the Library Research Center (LRC) of the University of Illinois to process data from Illinois public library annual reports filed with the Illinois State Library (ISL). The complete processing cycle is described, including: (1) preparation and revision of reporting forms; (2) their distribution and review; (3) the coding of data and its input into a computer file; (4) error checks performed; and (5) the generation of products, particularly a set of information elements from each library which is published annually in "Illinois Libraries," and the annual "Analyses of the Illinois Public Library Statistics," which presents sixteen ratios and percentages derived from annual report data. Information on processing costs and samples of input, editing and output programs are also provided. (ESR)

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ILLINOIS PUBLIC LIBRARY ANNUAL REPORTS: TECHNICAL PROCESSING

by

Susan Bonzi

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Illinois Public Library Annual Reports: Technical Processing

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For the past several years, the Illinois State Library (ISL) has contracted with the Library Research Center (LRC) at the University of Illinois for statistical services. These services consist largely of the computer input and analysis of several surveys, including yearly surveys of public, academic, special, and school libraries, along with one or two one-time studies. This technical report describes the LRC's work with the major survey processed for the ISL, the Illinois Public Library Annual Report. Each of the 586 public libraries in Illinois is required by law to file an annual report with the ISL each year.

Preparation, Distribution, and Receipt of Annual Reports

On the recommendation of the Illinois Library Association Public Library Statistics Committee, the annual report form is reviewed each year. Initially modelled after the Library General Information Survey (LIBGIS) form of the National Center for Education Statistics, the annual report has gradually evolved into a briefer form tailored to meet the needs of the ISL and the regional library systems in Illinois.

After the annual report form has been accepted by the ISL, the LRC arranges for it to be typeset and printed. The forms are sent from the ISL to the public libraries through the eighteen state-funded multi-county li-

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brary systems. In December of every year, each public library in Illinois receives three copies of the form: one working copy, one copy to be filed with the library's local government, and one copy to be sent through the system to the ISL.

The completed annual reports are returned to the ISL through the library systems where they are reviewed by a member of the library system staff for errors, incomplete information, and possible ambiguities. Each system makes two photocopies of the original edited return -- one for the local library and one for the system. The original is sent to the ISL which makes another photocopy for itself and forwards the original to the LRC for processing.

In the past, the LRC has conducted regional meetings with system personnel to review problem areas of the annual reports, e.g., changes from the previous year's form, and points on which there have been problems. Since most questions are repeated year after year, and since most personnel now working with annual reports have done so for several years, in 1982 only one meeting was held for all new personnel and anyone else who wished to attend. The LRC also sent a packet of editing guidelines to each system person who has dealt with the annual reports previously.

Information on public libraries in Illinois is gathered not only through the annual reports but also from the ISL. Before the annual reports are received, the ISL provides the LRC with each public library's legal name, the official census population of the area it serves, the type of library (city, county, district, etc.), the regional system to which the library belongs, the library's tax rate, and its assessed valuation. This information, along with selected data elements from the annual reports, is published each year in the statistics issue of Illinois Libraries.

All data from the ISL are input into one machine-readable database, and 73 data elements from the annual reports are input into a separate database. These databases are merged before the output programs and analyses are run.

ISL Data Manipulation

Data received from the ISL are input into disk files with the aid of an interactive computer program written in PASCAL and implemented on the University of Illinois' CYBER 175. The program prompts the inputter with the appropriate question, retrieves the response from the terminal input, and stores it in the database. All data are stored in fixed-field format; in general, alphabetic data are stored in left-justified form, while numeric data are stored in right-justified form. These restrictions are imposed so that the data will be compatible with the Statistical Package for the Social Sciences (SPSS), which is used for nearly all statistical analysis.

All data are input by two different people into two separate machine-readable databases. Some input errors will be made (ca. 6-10 per thousand inputs), but the assumption is that two people will not both input the data incorrectly in exactly the same manner. A comparison program checks each data element for a given library in one database against the same data element for the same library in the second database, thus detecting input discrepancies. The comparison program is also written in PASCAL. Along with a procedure which calls on SORTMRG, a system utility which sorts and/or merges files, it sorts the databases, selects identification number matches between the two databases (not all information is input into both files at the same time), and compares information that has been input into both databases. Output from this comparison program is in the form of the record from each file where a discrepancy has been found and pointers which indicate exactly where the discrepancy occurs. Figure 1 shows a sample of output from this comparison program.

Fig. 1. Example of Output from Comparison Program to Identifying Discrepancies Between Two Inputs of ISL Data

```
0090  16 DI SUB   182612759 .275     20509
0090  17 DI SUB   182612759 .275     20509
        ^

0190  16 VI NSU   490256936 .3394    66116
0190  16 VI NSU   490265936 .3394    66116
                    ^^

0200  21 VI LIN    10005047 .07       2122
0200  21 VI LON    10005047 .07       2122
            ^

0290  84 CI LEW    10780222 .23       3616
0290  84 CI LEU    10780333 .23       3616
            ^         ^^^

0300  45 CI DUP   414415011 .1894    81293
0300  45 CI DUP   413315011 .1894    81293
                    ^^

0390  16 VI SUB    91325995 .40      19811
0390  16 VI SUB    91326995 .40      18911
                       ^              ^^

0480  55 DI WES    18741426 .1228     1518
0480  66 DI WES    18641426 .1228     1518
        ^^            ^

0490  22 VI DUP    99894102 .15      12659
0490  22 VI DUP    99894102 .16      12659
                             ^

0590  16 VI SUB   115752077 .15      14155
0590  16 VI SUB   115752077 .14      14155
                             ^

0600  72 VI ILL     3569923 .40        890
0600  73 VI ILL     3569923 .40        890
        ^
```

Corrections to the database are made with a database editor, again written in PASCAL, and like the input program also interactive. The database editor allows the human editor to correct entries without having to know the structure of the database. The human simply reacts to queries about which library's entry needs updating, the response (data element) that needs updating, and the correct value. The database editor automatically searches for the correct library entry, finds the field where the response is located, and makes the desired correction. No further human intervention is required.

Two versions of the database editor are now in use, one for ISL data corrections and one for annual report corrections. The editor which is used to correct errors in input of information received from the ISL consists of two separate programs. One program handles the interactive system and stores the user's responses in a local data file. The second program performs the actual updates in the database.

Information received from the ISL is such that only an identification number need be added to each library's data, and if the library serves residents in more than one county, two calculations need to be made. Annual report information, however, requires much more extensive work before input can begin.

Annual Report Data Manipulation

The annual reports are received over a period of approximately five months. As they are received by the LRC, they are first checked in and assigned standard identification numbers which allow sorting alphabetically by the name of the library. The annual reports then go to one editor who checks for inconsistencies, assigns codes, and performs calculations on the number of hours open per day and on library staff information (number of staff in each of eight categories and full-time equivalent staff in each of three

categories). A second editor reviews for inconsistencies, checks the first editor's calculations, and scans the report for any information which may warrant a footnote.

When questions arise during editing of a library's annual report or when comparisons with the previous year's data indicate a discrepancy, the system to which that library belongs is contacted. The system then secures the answer from the library, amends its own copy of the annual report, if necessary, and sends the information to the LRC. A log is kept of all questions sent to systems; this identifies problem areas in the annual report form. In each of the last two years (1981 and 1982), 11% of the reports needed to be clarified through contact with the systems.

After editing is completed, all quantitative data from each annual report are entered into computer files, again by two people. The input program is interactive, written in PASCAL, and queries the inputter for each response. Figure 2 shows part of the input program. The program contains several features which aid the inputter. If the inputter makes a mistake and realizes it after hitting the return key, he or she can back up to the mistake and re-input the data from that point on to the end of the program. Also, since a series of blank lines or the repetition of some character (e.g., zero) occurs fairly regularly in these reports, another useful feature is an option to skip variable numbers of responses and enter any one character into each response skipped. Accidental termination of the program is protected by a series of checks.

A somewhat more sophisticated program is needed for comparison of the annual report information than for comparison of the ISL-supplied information. Whereas the information received from the ISL consists of only 8 data elements, 73 are input from each annual report form. It is easy to remember

Fig. 2. Example of the Input Program for Entering Annual Report Data into a Computer File

```
1982 ILLINOIS PUBLIC LIBRARY ANNUAL REPORTS
LIBRARY ID NUMBER              ? 0820
LIBRARIANS NAME                ? Nancy J. Black
7.POPULATION                   ? 3445
8.MONDAY                       ? %
HOW MANY RESPONSES WOULD YOU LIKE TO SKIP (INCLUSIVE)?
? 8
WHAT VALUE DO YOU WISH SPECIFIED ?
? 0
9.NUM OF BRANCHES              ? 1
10.NUM OF BOOKMOBILES          ? 0
11.NUM OF RESIDENT CARDS       ? 1100
12A.FAMILY NUMBER              ? 92
12B.FAMILY LIBRARY FEE         ? 8.00
12C.FAMILY SYSTEM FEE          ? 15.00
13A.INDIVIDUAL NUMBER          ? 0
13B.INDIVIDUAL LIBRARY FEE     ? 8.00
13C.INDIVIDUAL SYSTEM FEE      ? 15.00
14A.STUDENT NUMBER             ? 6
14B.STUDENT LIBRARY FEE        ? 3.00
14C.STUDENT SYSTEM FEE         ? 15.00
15A.OTHER NUMBER               ? 0
15B.OTHER LIBRARY FEE          ?
15C.OTHER SYSTEM FEE           ?
16C.BOOKS ADDED                ? 233
16D.BOOKS HELD                 ? 6729
17C.FILMS ADDED                ? 0
17D.FILMS HELD                 ? 0
18C.RECORDINGS ADDED           ? 0
18D.RECORDINGS HELD            ? 93
19.PERIODICALS RECEIVED        ? 56
20.PERIODICALS HELD            ? 34
21.ADULT LOANS                 ? %
20.PERIODICALS HELD            ? 35
21.ADULT LOANS                 ? 14066
22.JUVY LOANS                  ?
23.TOTAL LOANS                 ? 14066
24.LOCAL GOVERNMENT FUNDS      ? 14680
25A.STATE PER CAPITA GRANTS    ? %
24.LOCAL GOVERNMENT FUNDS      ? 14860
25A.STATE PER CAPITA GRANTS    ? 1646
25B.STATE EQUILIZATION AID     ? 1577
25C.CORPORATE REPLACE TAX      ? %
HOW MANY RESPONSES WOULD YOU LIKE TO SKIP (INCLUSIVE)?
? 5
WHAT VALUE DO YOU WISH SPECIFIED ?
? 0
27.OTHER RECEIPTS              ? 1390
28.TOTAL RECEIPTS              ? 19473
```

the response numbers of 8 elements, and nearly, if not totally, impossible to remember the response numbers of 73 elements. Therefore, the comparison program for the annual report data generates four pieces of information for each discrepancy it encounters: the library identification code, the question number, the value input into one database, and the differing value input into the second database. Figure 3 shows a sample of the output of this comparison program. Again, the comparison program, along with its procedure file, sorts the two databases to be compared, selects matches, and only performs comparisons on libraries which have been input into both databases. Additional features in this comparison program include a message which specifies when a duplicate input has been found and on which database it resides, and a list of all nonmatching library identification codes which indicates if any annual reports were accidentally omitted from either database. The list of nonmatching codes also helps to identify incorrectly input identification codes.

The database editor for annual report information is similar to the editor for information received from the ISL. One additional feature of this editor shows both the original input and the correction. See Figure 4 for a sample of the annual report database editor output. The computer program for this editor, however, is quite different from that of the editor previously described. The program loads a table, which describes the structure of the database, into the central memory of the computer. The program is then "table driven." It prompts and retrieves the library identification number, the response number which requires correction, and the correct value. The program then uses the table to locate the correct field in the database and makes the correction.

Fig. 3. Example of Output from Comparison Program Identifying Disprepancies Between Two Inputs of Annual Report Responses

```
***** IPLAR'82 SURVEY DATABASE COMPARISON PROGRAM *****


**********
THE LIBCODE IS: 0110
RESPONSE NUMBER: 33
VALUE DATA BASE ONE:    15
VALUE DATA BASE TWO:    14
**********
**********
THE LIBCODE IS: 0150
RESPONSE NUMBER:  2
VALUE DATA BASE ONE:    1645
VALUE DATA BASE TWO:    1655
**********
**********
THE LIBCODE IS: 0200
RESPONSE NUMBER:  2
VALUE DATA BASE ONE:    2210
VALUE DATA BASE TWO:    2200
**********
**********
THE LIBCODE IS: 0250
RESPONSE NUMBER:  2
VALUE DATA BASE ONE:    2370
VALUE DATA BASE TWO:    1370
**********
**********
THE LIBCODE IS: 0290
RESPONSE NUMBER:  1
VALUE DATA BASE ONE: Shirly Marshall
VALUE DATA BASE TWO: Shirley Marshall
**********
**********
THE LIBCODE IS: 0380
RESPONSE NUMBER: 52
VALUE DATA BASE ONE:   22550
VALUE DATA BASE TWO:   22500
**********
**********
THE LIBCODE IS: 0500
RESPONSE NUMBER:  4
VALUE DATA BASE ONE: 13.0
VALUE DATA BASE TWO: 12.0
**********
**********
THE LIBCODE IS: 0630
RESPONSE NUMBER: 50
VALUE DATA BASE ONE:      665
VALUE DATA BASE TWO:      655
**********
```

Fig. 4. Sample Output of the Annual Report Data Base Editor

```
***** IPLAR'82 SURVEY DATA BASE EDITOR *****
LIBCODE           ? 0110
RESPONSE NUMBER   ? 33
CORRECT VALUE     ? 15
***** THE UPDATE IS COMPLETE *****
THE INCORRECT VALUE IS:    14
THE CORRECT VALUE IS: 15
***** READY FOR NEXT UPDATE *****

LIBCODE           ? 0150
RESPONSE NUMBER   ? 2
CORRECT VALUE     ? 1645
***** THE UPDATE IS COMPLETE *****
THE INCORRECT VALUE IS:    1655
THE CORRECT VALUE IS: 1645
***** READY FOR NEXT UPDATE *****

LIBCODE           ? 0200
RESPONSE NUMBER   ? 2
CORRECT VALUE     ? 2210
***** THE UPDATE IS COMPLETE *****
THE INCORRECT VALUE IS:    2200
THE CORRECT VALUE IS: 2210
***** READY FOR NEXT UPDATE *****

LIBCODE           ? 0250
RESPONSE NUMBER   ? 2
CORRECT VALUE     ? 1370
***** THE UPDATE IS COMPLETE *****
THE INCORRECT VALUE IS:    1370
THE CORRECT VALUE IS: 1370
***** READY FOR NEXT UPDATE *****

LIBCODE           ? 0290
RESPONSE NUMBER   ? 1
CORRECT VALUE     ? Shirley Marshall
***** THE UPDATE IS COMPLETE *****
THE INCORRECT VALUE IS: Shirly Marshall
THE CORRECT VALUE IS: Shirley Marshall
***** READY FOR NEXT UPDATE *****

LIBCODE           ? 0380
RESPONSE NUMBER   ? 52
CORRECT VALUE     ? 22550
***** THE UPDATE IS COMPLETE *****
THE INCORRECT VALUE IS:   22500
THE CORRECT VALUE IS: 22550
***** READY FOR NEXT UPDATE *****
```

After the databases have been edited for input errors, several other comparisons are made. The program for these comparisons, written in PL/I, contains four options. The first two options compare the present year's name of the library, the head librarian's name, the county, the regional library system, the type of library, and the population served with the previous year's information. In some instances, discrepancies are due to actual changes from year to year. In most cases, however, the discrepancies are due to slight variations in the recording of names or actual errors in transcription. The policy has been to keep all names exactly as previously recorded, unless of course there is a personnel change. Editing of errors from these comparisons is made with the database editor previously described.

A third comparison option adds all library receipts, expenditures, and adult and juvenile transactions. It then compares these totals with the totals also input from the annual reports. If a difference of $1 is found in expenditures or receipts, no correction is made to the data, since this is usually a rounding error. A difference of more than $1 is brought to the attention of system personnel, who then contact the public library in which the discrepancy was found. The database is revised when the correct information is received from the library.

The fourth option has been implemented in two ways in the past. The first version compared most numeric data elements in each library's annual report with its previous year's report in order to detect at least major input errors. An arbitrarily chosen difference of 40% was used as an acceptable level of change from one year to the next. During the implementation of the program in 1980, over 1,000 changes greater than 40% were output by the program. Each change was verified for accuracy on the present year's report, and no errors were detected. This gave us good evidence that first, fairly large changes

in a library's finances and holdings were feasible, and second, this option seemed to be of very little worth in checking for accuracy of data. The decision was made to use the program one more year, this time specifying the acceptable differences between the two years' data (from 10% difference to 200% difference). An addition to the program gave not only the library identification code, data element, previous year's figure and present year's figure, as had the previous version, but also the actual percentage difference perceived. It might not be necessary to check, for example, a 25% difference when 20% was specified. All large changes were checked, and again, no errors were detected. Therefore, this option has been deleted from the battery of comparison tests.

Publication of Data

After all annual reports have been received and all data have been input and verified for accuracy, a final program generates the information elements for each library in a previously established format. In addition to the name of the library, it provides the head librarian's name and the system to which the library belongs. The program also cumulates several of the data elements, e.g., population, transactions, and operating expenditures, and generates the totals for the entire state. The printed output is sent to the ISL for typesetting and production in the November issue of Illinois Libraries.

In addition to the production of information for publication in Illinois Libraries, each year the LRC also produces the Analyses of the Illinois Public Library Statistics. These analyses include sixteen ratios and percentages derived from the annual report data, such as transactions per hour open. percent of total staff which hold degrees in librarianship, and assessed

valuation per capita. These ratios and percentages are recorded for each library, and their arithmetic average, high, low, and quartile values are shown for all libraries in each regional library system and in each of six population groups, as well as for all libraries in the state. In addition, the average, high, low, and quartile values are given for 16 of the 19 data elements published in Illinois Libraries, again for all libraries in each system and in each population group, and for all libraries in the state.

The Analyses is produced at the University of Illinois. The computer program which performs the calculations and generates the data is written in PL/I. Output is generated in camera-ready copy on a typewriter-quality printing computer terminal. For each of the past four years the University's Office of Printing Services has produced 1,200 copies which are then distributed by the ISL. The 1981-82 Analyses includes 22 computer-generated graphs produced with Tektronix's Easy Graphing. These graphics illustrate some of the more striking differences among population groups and systems.

Other Reports

Special reports and other analyses of public library data are available upon request to and with permission of the ISL. In addition, ISL personnel ask for some analyses each year, e.g., data arranged by county. The staff of the LRC also make use of the data to write special reports which are published in the Illinois Library Statistical Report series. Some requests for information require the implementation of a computer program, generally written in PL/I because of formatting specifications, but most requests are filled through the use of SPSS.

Data Storage

Data are initially input and stored on computer disk on the CYBER 175. A copy is sent to the IBM 4341 for manipulation by the PL/I programs when they are run. Eventually, though, all data and programs used to generate data are stored on magnetic tapes. The tape storage serves as an archive since disk copies are also kept on the CYBER 175.

Costs

Many factors enter into the costs involved in producing information for the ISL. Because of improvements which have been made in programs, in the equipment available, and in the quality of the staff, the costs which are reported here are probably considerably different from those which would be incurred by another installation.

The data received from the State Library on each public library are assigned library identification numbers (two hours at $4.50 per hour) and require certain manual computations (two hours of a graduate assistant at $7.50 per hour). Input into a computer file takes 7 hours per input at $4.50 per hour. The comparison program costs about $2 per run, and three runs are generally needed before the file is clean. The file editor to correct the input errors costs $1 per file and is generally run three times on each file. Staff time to correct the errors takes about two hours of a graduate assistant at $7.50 per hour. The total cost for this phase is thus $114.

Editing of the annual reports averages approximately 3 minutes per report for each editor. At $4.50 per hour for the first editor (an experienced undergraduate student worker) and $6.50 per hour for the second editor (a graduate assistant), the average cost of editing each annual report is about $0.55.

Questions which must be sent through the library systems generally take very little time. Long distance telephone calls using a WATS line cost only $0.08 per minute, and most calls take less than 3 minutes to make. Based on 64 calls in 1981 and 62 in 1982, the total cost of clearing up questions with system personnel is about $40 per year, including staff time.

Input of the data from the annual reports is quite inexpensive. Experienced student workers can input about 15 annual reports per hour, providing the computer is running well. At $2 per hour computer time and $4.50 per hour (student worker) staff time, the cost is $0.43 for one input and $0.86 for double input.

Clean-up of files using the comparison program varies with the size of the file. Initially, both the comparison programs and the file editing program are very inexpensive to run, but as file size increases, so does the cost of running the programs. With one third of the file input, cost of the comparison program is about $1, including print charges; with the entire file input, the cost is approximately $2.85. For 25 corrections to be made, the file editor costs about $0.90 to run on both files, and staff time is about $2.50, with one third of the file input. Cost of the file editor is about $1.25 when the entire file has been input, and staff time remains essentially the same.

The cost figures quoted above are somewhat misleading because although they are accurate for individual tasks, they do not account for the time spent in logging onto the computer, waiting if the computer is slow, collecting materials to begin a task, asking questions, answering them, coffee breaks, and the like. Under ideal conditions, i.e., the computer working perfectly, humans working steadily with not even a glance at the clock, costs would probably be doubled. Under normal conditions, actual costs are even greater.

Programming costs are very difficult to assess because the programmer has rarely kept an accurate count of hours spent in developing and refining specified programs. The programmer often works on more than one project at a time, for example, revision of an output program for one project and the creation of a file editor for another. Costs for programming have risen considerably in the past, mainly because of developments in new types of programs which save the time of other personnel in the LRC. An increased initial expenditure is obviously worthwhile if the result is a decrease in future expenditures. For example, the new comparison and file editing programs took many hours to develop, but the savings in staff time have been quite substantial. Previous comparison programs simply printed lines on which there were discrepancies and highlighted the disagreements. The human editor had to figure out where the discrepancies occurred on the survey form, find which input was correct, and then enter the incorrect file, find the line with the incorrect figure, and correct the line. The newer comparison program, which was described above, saves a great deal of staff time. A file which once took 30 minutes to correct can now be corrected in 5 to 10 minutes.

Actual costs incurred in 1982 in the revision of programs supporting the project described here can be estimated, mainly because a new programmer worked almost exclusively on this project during the first three months of his appointment. No revision was necessary for input program, comparison program, or file editor for the ISL data. Because there are so few data elements and because they are in the same format as the previous year's data, the same programs were used. Revision of the annual report input program was minimal, since the 1983 form is very much like last year's. Both the comparison program and file editor for annual report data entailed the writing of new programs, but since similar programs had been recently

developed for another project, preparation of programs designed for the annual report was neither difficult nor time-consuming. In all, the revision and testing of these programs took about three weeks of the programmer's time. At $6 per hour and 20 hours per week, cost of revision for this set of programs was about $360.

Revision of the program which produces information to be published in Illinois Libraries took longer than expected in 1982 because of an unfortunate decision to store data in lines longer than 80 characters. Since the data for the output program must be sent across a tieline which cannot handle lines longer than 80 characters, additional time was needed to circumvent this problem. Approximately 95 hours of programming time were needed to revise this output program; at $6 per hour, the total cost was approximately $570. In addition, the cost of running the program is about $5 per run. Since several runs had to be made before acceptable output was produced, total cost for running the program was about $50. The final print sent to the ISL is done on special paper and in three copies, for a direct cost of approximately $13.

Production of the data for the 1981/82 Analyses of the Illinois Public Library Statistics also took longer than expected, not only because of the problem mentioned above but also because of some inaccuracies in the previous year's program. Approximately 105 hours of programming time were involved, for a cost of $630. Also included in the cost of producing the Analyses are the running of the program ($15 for each of about 10 runs) and one print charge of about $3. Since this final print is done on a 30 character per second typewriter-quality printing terminal, someone must be with the terminal to make sure that nothing goes wrong. It generally takes a total of five hours to print the tables, so at $4 per hour for a student worker's time, the total labor cost of final printing is about $20.

Graphics for the Analyses cost about $205. This includes $2.25 per graph in final print charges ($49.50 total for 22 graphs), $120 in student worker's time to gather the statistical data and develop the graphs, and about $35 of computer time to produce the graphs.

The University's Office of Printing Services has printed and bound the Statistical Analyses for each of the past four years. The estimate for printing of 1200 copies of the 1981/82 edition is $2,300.

In summary, the total of the unit costs for processing the 1982 Illinois Public Library Annual Reports is over $5000. But these unit costs are the minimum which can be expected in an operation like this. They do not reflect actual operating conditions which include training new student assistants, errors resulting from misunderstood directions or fatigue of operators, loss of input when the computer goes down, and other such facts of life. Nor do these minimum or optimum unit costs include the time of supervisors, let alone the indirect costs mandated by the University. They do reflect the fact that the Research Center has sufficient volume of business to employ three half-time graduate research assistants, four one-third time undergraduate student assistants, a one-half time graduate student programmer, and clerical assistants. The actual budgeted cost for processing the 1981/82 IPLARS and for producing the Analyses of the Illinois Public Library Statistics was $17,850, not including the University's indirect cost surcharge.

Many factors enter into the processing of the Illinois Public Library Annual Reports. Experience has shown that the two factors most important to the success of the operation stem from affiliation with the University of Illinois. The computer facilities available are quite extensive; two computers (CYBER and IBM) support a wide variety of programming languages, graphics packages, system utilities, and statistical analysis packages.

More important is the ability to find very competent people--intelligent and industrious student workers, able computer programmers, and graduate assistants with both knowledge and experience in the library field.